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## **On the phonology of nonsense syllables**

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### **Abstract**

Nonsense syllables (NS) appear to be widespread in the languages of the world. Through the analysis of data from childlore, folksongs and scat-singing, this paper evaluates three hypotheses (H) regarding the types of syllable structure and phonemes found in NS: H1 states that the most common syllable structure is CV and that clusters with 3 or more consecutive consonants are rare; H2 states that the most common vowels are /i a u/; H3 states that stops are the most common category of consonants. The data supports H1 and H3, while evidence for H2 is less conclusive. An unexpected finding involves the relatively high frequency of liquid (i.e., lateral and rhotic) consonants.

### **1. Introduction**

The use of so-called nonsense syllables (NS), often associated with oral poetry, song, dance and childlore, has been reported in a number of cultures and languages (Arleo 1980, Frigyesi 1982, Tran 1982, Jouad 1990, Rivière 1991, Fribourg 1997). The study of NS may involve their structure and patterning, their relationship to meter and musical rhythm, their linguistic and situational contexts, and their functions. This paper will focus on the types of syllable structures and phonemes that are commonly found in NS. Section 2 examines the notion of nonsense and provides a working definition of NS. Section 3 presents general and specific hypotheses (H1-3) regarding NS. Sections 4, 5 and 6 test H1-3 through the analysis of data from childlore, folksongs and scat-singing. The conclusion provides an overall assessment of H1-3 in the light of these results and suggests new directions for research.

### **2. Defining nonsense syllables**

The English term nonsense refers to a wide range of linguistic and cultural phenomena, including the literary tradition associated with Lewis Carroll and Edward Lear as well as folk traditions. For example, "tangle talk", a form of nonsense used by schoolchildren, creates semantic anomaly through the manipulation of existing words, thus violating rules of grammatical categorization: "As I walked down to the wayrail station, I met a bark and it dogged at me..." (Opie 1959: 44). NS, on the other hand, do not involve the reordering of existing words, since they consist of sound patterns that do not form lexical units. The expression *nonsense syllable* (or French equivalents like

*syllables non-significatives/vides/asémantiques*) is, however, somewhat unfortunate in several respects. First of all, in ordinary communicative language, syllables on their own are also "nonsensical", unless they happen to be morphemes. What makes NS different from such ordinary syllables is not that they are meaningless, but that they lack constituent structure, i.e., they do not combine to form lexical units, which in turn form syntactic units, and so on. Second, although NS lack referential meaning, they may have some degree of pragmatic meaning. For instance, the well-known French counting-out rhyme "Amstramgram...", which might be considered a prototypical example of NS, functions as a performative, meaning pragmatically "the player designated as I pronounce the last syllable of this sequence is declared 'Out'" (Arleo 1997: 396). Once clarified, the expression NS is nevertheless more accurate than alternatives like *gibberish* or *mots sauvages*, which are even more vague and misleading. This paper will therefore use the term NS, defined as follows: NS are sequences of syllables that do not combine to form lexical units, although they may form utterances with pragmatic meaning.

### 3. Hypotheses relating to nonsense syllables

This section presents several specific hypotheses (H1-3 below) regarding the types of syllable structures and phonemes often found in NS. These specific hypotheses are related to and derived partially from three more general hypotheses. The first is that NS represent a simplification of the underlying phonological system, especially in terms of articulation. For example, we do not expect to find many NS with heavy consonant clusters, even in those languages which allow them (e.g., Eng. *texts*, CVCCCC). The second general hypothesis, which might be called the "regression theory", is that NS resemble forms used by children in the early stages of language development. For example, we expect to find that CV syllables predominate in NS, as this structure is "characteristic of the canonical babbling period [and] is also the most frequent in early word productions." (Menn and Stoel-Gammon 1995: 338). Finally, there is the idea that NS are made up mostly of phonemes that are widespread in the languages of the world. In this view, we would expect to find, for instance, a large proportion of the phonemes /i, a, u/, which, although not universal (there are two-vowel systems), are the most frequent oral vowels (Ladefoged and Maddieson 1996: 298). Likewise, since "stops are the only kind of consonants that occur in all languages" (ibid., 47-48), we can predict that NS will have many stops. These general hypotheses, which tend to overlap and converge, lead us to formulate the following more specific and testable hypotheses regarding NS:

- H1a: the most common syllable structure is CV
- H1b: consonant clusters with 3 or more consecutive C are relatively rare
- H2: the most common vowels are /i/, /a/ and /u/
- H3: stops constitute the most common consonant category

These hypotheses are framed in relative probabilistic terms since we expect to find statistical tendencies rather than absolute deterministic laws. In our search for "core" cross-linguistic (and perhaps universal) tendencies, we should also remember that

many NS are due to historic and cultural accident, in particular to "desemanticization", i.e., once-meaningful words that have evolved into nonsense.

#### 4. Nonsense syllables in children's oral tradition

This section examines data from studies of children's oral tradition. In the following section we will turn to NS in French and English folksongs, which may be sung by adults or children.

In a study of approximately 50 Spanish children's singing games, Fribourg (1997: 96-97) found that the eliminatory games, which contained mostly nonsense syllables ("syllabes barbares") had simplified and regressive sound patterns with many CV syllables as opposed to the meaningful sequences of another category of singing games, which had more CCV syllables. Furthermore, stop + liquid clusters (e.g. /tr/) were 3.6 times less frequent in the nonsensical eliminatory games. She notes: "Il y aurait dans les chansons de ces jeux éliminatoires comme un retour au début de l'apprentissage du langage, *dada dede, milikitu*, etc. On trouve peu de groupes consonantiques CCV mais plutôt des groupes CVCV." In respect to types of phonemes, Fribourg found some fundamental vocalic oppositions between /i/, /u/ and /a/ , e.g. *dilakatu*. Although she provides statistics comparing the percentage of phonemes in the singing games with their percentage in the spoken language, it is difficult to use this data for the present study as the singing games contained many meaningful sequences. We may nevertheless note that, in the eliminatory singing games, stops were nearly three times more frequent than fricatives: 58% vs. 20%. However, this did not diverge significantly from the proportion in the spoken language: 54% (stops not including bilabials) vs. 23% (fricatives). In regards to vowels, /i u a/ accounted for 56% of the vowels in the eliminatory singing games whereas /e o/ accounted for 44%. But, once again, the percentages for the spoken language were similar: 52% for /i a u/ vs. 48% for /e o/. We should note that Spanish has a relatively simple vowel system compared to French or English, so it is not surprising that a large proportion of vowels will be /i u a/. In conclusion, this study does not disconfirm our three hypotheses, but does not demonstrate specific tendencies of singing games containing NS compared to the spoken language.

We turn now to a study of nonsense sequences in French counting-out rhymes reported in Arleo (1997: 398-399). In a sample of 20 French counting-out rhymes made up mostly of NS, I compared the frequencies of the vowels /i/ and /y/: there were 112 occurrences of /i/ compared to 25 occurrences of /y/; furthermore, all 20 rhymes contained at least one occurrence of /i/ whereas /y/ only appeared in 9 rhymes. In the spoken language, according to Léon (1966), the relative frequency of /i/ is 5.6% compared to 2% for /y/. In other words, /i/ is 2.8 times more frequent than /y/ in spoken French. In our sample /i/ was 4.48 times more frequent than /y/. Furthermore, out of the 25 occurrences of /y/, in only one instance was the sequence clearly nonsensical (*capularisto*); elsewhere /y/ appeared in contexts that could be considered meaningful (e.g., *numéro*). Therefore, the proportion of /i/ to /y/ in the nonsense sequences is considerably higher. This study supports our general hypothesis that among NS a

widespread phoneme like /i/ is far more frequent than a phoneme like /y/, which is relatively rarer in the languages of the world.

In an unpublished paper on NS in Hungarian children's songs, Frigyesi (1982) provides an example of nonsense sequence "tra la la la tra la la la la la", which is used as a metrical filler. She also notes that in nursery songs performed by adults for very young children the vowels /u a/ as well as the voiced oral stops /b d g/ are relatively frequent, e.g. *duda*, *Buda*.

Finally, it is interesting to note that the three-way opposition between /i u a/ has been reported in children's traditions in several languages. Fribourg (1997: 71) provides an example that ends with "Pim/ pam/ pum/ fuera!". Arleo (1997) gives similar examples of vocalic contrast within an identical consonant frame: "Zig zag zoug" in French and "Bim bum bam" in Italian.

## 5. Nonsense syllables in folksongs

I will now look briefly at the data used for an earlier study on NS in French and Anglo-American folksongs (Arleo 1981). The unpublished appendix for this study lists 200 NS that were found in the corpus, which was gleaned from published folksong collections. As the number of actual occurrences (i.e., tokens) of each NS was not tabulated, we will call these NS types. Table 1 below breaks down these NS by syllable structure (percentages are not given since each corpus contained exactly 100 NS types).

*Table 1. Syllable structure of nonsense syllables in French and English Folksongs*

	V	CV	VC	CVC	CCV	CCVC	CVCC	CC	Total
English	7	63	1	21	0	1	6	1	100
French	5	64	0	24	7	0	0	0	100

As can be seen, in both languages CV was by far the most common syllable structure, followed by CVC. Other patterns were infrequent and there were no examples of clusters with more than two consecutive consonants. In the English corpus we note one NS type made up of two consonants /dl/, the second being a syllabic /l/ (cf. the nursery rhyme sequence "hey diddle diddle"). The data from this study therefore strongly supports H1a and H1b.

Tables 2 and 3 use a subset of the same data, breaking down the 127 NS types with CV syllable structure by phonological category. Table 2 categorizes the (initial) consonants.

*Table 2. Consonants from 127 NS types with CV syllable structure, broken down by phonological category (percentages in parentheses)*

	Oral stops	Nasal stops	Liquids	Fricatives/ Affricatives	Other /h j w/	Total
English (100)	25 (39.7)	6 (9.5)	15 (23.8)	6 (9.5)	11 (17.5)	63
French (100)	32 (50.0)	11 (8.7)	18 (28.1)	5 (7.8)	4 (6.3)	64

The data in Table 2 confirms H3 since oral and nasal stops combined account for 49.2% of the consonants in the English sample and 58.7% of the consonants in the French sample. However, we can also see that the liquids /r l/ (which are of course phonetically different in English and French) are quite frequent in the NS of both languages. Finally, certain phonemes, like the English interdental fricatives /ð θ/, were not found at all. This confirms the general hypothesis that the less widespread phonemes are infrequent in NS. We turn now to Table 3, which indicates the frequencies of vowels /i a u/ compared to other vowels.

*Table 3. Frequencies of vowels /i a u/ compared to other vowels in 127 NS types*

	/i/	/a/	/u/	Other	Total
English	11 (17.5)	7 (11.1)	7 (11.1)	38 (60.3)	63 (100)
French	9 (14.1)	8 (12.5)	6 (9.4)	41 (64.1)	64 (100)

The data confirms H2 only for the vowel /i/, but not for /a/ and /u/. In the English corpus the lax /ɪ/ and the diphthong /aɪ/ both had 9 occurrences; in the French corpus there were 9 occurrences of /e/.

## **6. A brief exploration of nonsense syllables in scat singing**

Although scat-singing undoubtedly deserves a full-length study, this section must be limited to an exploratory discussion of this art form, based on brief analyses of two outstanding performances by Louis Armstrong and Ella Fitzgerald. Statistical tables will not be provided since it was impossible to obtain totally accurate transcriptions of all the scat syllables, in spite of repeated listenings to the recordings at normal and reduced speeds. Nevertheless, it is possible to give some approximate figures that will confirm or disconfirm H1-3.

Although not the first recording of scat, Louis Armstrong's 12-bar scat chorus on "Heebie Jeebies", recorded with the Hot Five on February 26, 1926, was extremely influential and even legendary (Baudoin 1995 : 9-10). Several months after the recording the music and lyrics, including a transcription of the "Skat Chorus", were copyrighted and published. The first four measures of this published version are:

"Skeep! Skipe! Skoop! Brip Ber Breep ber la bah Bree, heeb, bee doo, la doo...". While parts of this transcription do not seem accurate, we can make out some clear patterns. First of all, we note three-way contrast between the vowels /i/, /a/ and /u/, within the consonant frame /sk\_p/, a device that is widespread in folk tradition, as mentioned above. The sound spelled "br" appears to be a trilled /r/, or perhaps a coarticulated /b/ and trilled /r/, which may be an imitation of the trumpet. The rest of the performance contains many instances of the sequence /didu/. Of the 50 syllables, over 30 are CV and 6 have an initial consonant cluster /sk/. The voiced stop /d/, by far the most frequent consonant, can be heard initially in over half of the NS. The vowels /i/ and /u/ are also found in over half of the NS, with /i/ being the most frequent vowel.

Our second example of scat-singing comes from Ella Fitzgerald's masterful live performance of "How High the Moon" recorded at a Berlin concert in 1960. The first 32 bars of her performance contains about 148 syllables. There are no consonant clusters and roughly 80 to 85% of the syllables are CV, which is not surprising given the fast tempo (approximately 284 beats per minute). In the passages made up of consecutive eighth notes, Ella is articulating about 9.48 syllables a second. To cope with this high speed, her articulatory strategy is to use mainly CV syllables made up of an occlusive (/b/ and especially /d/), usually followed by alternating high vowels /i/ and /u/, thereby producing a swinging front-back movement. We also note the use of the glide /j/, which may be a transitory phenomenon as well as a stylistic marker. There are virtually no fricative consonants in this performance, which is also probably due to the rapid tempo (the reader is invited to articulate /sisu/ at 284 beats a second) as well as to the fact that scat singers tend to favor the percussive occlusives. Finally, Ella, provides an overall architectural unity to this chorus through the use of a repeating NS motif: /u di ju di/.

These two analyses of scat-singing show that "basic-level" scat does indeed contain many CV syllables with occlusives (especially /d/) and vocalic opposition, especially between /i/ and /u/ (cf. /didu/). However, around this basic core, we may also notice more distinctive stylistic innovations such as Armstrong's use of the consonant cluster /sk/ (cf. also "scat"). Other masters of scat, like Cab Calloway, also used fricatives like /z/ (e.g. "Zaz Zuh Zaz", cf. also French *zazou*). The fact that jazz, more than traditional folk music, has an ethos of innovation undoubtedly favors the use of original and "non-standard" NS.

## 7. Conclusion

This paper has attempted to define "core" cross-linguistic tendencies in NS paper by testing the three hypotheses presented in §3. The data strongly supports H1(a & b): in all the studies reviewed the most common structure was CV and there were no clusters with 3 or more consecutive consonants. H3 is also supported, especially for the French and English folksongs and scat-singing: occlusives were the most common consonant category whereas fricatives were far less frequent. However, one unexpected finding was the importance of liquids (laterals and rhotics) in the folksong corpus. We may therefore reformulate H3:

*H3: stops constitute the most frequent consonant category in NS, followed by liquids, followed by fricatives/affricates (stops > liquids > fricatives/affricates).*

Evidence for H2 is less conclusive: although /i a u/ were found in all the studies, they were not necessarily the most frequent vowels. We did however note two-way and three-way oppositions between these vowels (e.g., *Zig, zag, zoug*). We noted the presence of diphthongs and lax /ɪ/ in the English data and nasal vowels in the French data.

Further investigation is required to test the three hypotheses, and if they are confirmed, to provide possible explanations. One important factor, especially for up-tempo performances, appears to be articulatory ease. By combining principles of economy and contrast, certain NS sequences (e.g. "taki taki") may constitute optimal phonetic gestures for performers.

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### **Discography**

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Ella Fitzgerald. *Mack the Knife Ella in Berlin*, Verve CD 825 670-2 (recorded Feb. 13, 1960).